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Question Paper Code : X 20663

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Sixth/Seventh/Eighth Semester

Civil Engineering

GE 6757 – TOTAL QUALITY MANAGEMENT

(Common to Aeronautical Engineering/Automobile Engineering/Biomedical Engineering/Civil Engineering/Computer Science and Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Environmental Engineering/Industrial Engineering/Industrial Engineering and Management/Instrumentation and Control Engineering/Manufacturing Engineering/Materials Science and Engineering/Mechanical Engineering/Mechanical and Automation Engineering/ Mechatronics Engineering/Medical Electronics/Petrochemical Engineering/ Production Engineering/Chemical Engineering/Fashion Technology/Food Technology/Information Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical Technology/ Plastic Technology/B.Tech. Polymer Technology)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. What is meant by the term 'Quality Assurance' ?
2. Name any two simple techniques for the analysis of Quality Costs ?
3. What is the role of Quality circles in quality council ?
4. Define the term 'Partnering'.
5. Mention the use of 'Ishikawa Diagram'.
6. List any four types of Failure Mode and Effect Analysis (FMEA).
7. Define the term 'Bench Marking'.
8. What is the advantage of Taguchi's Quality Loss Function ?
9. Name any three requirements of ISO 14001 standard.
10. Write any two global benefits of an Environmental Management System (EMS).



11. a) i) Describe briefly about Total Quality Management (TQM) frame work system. (7)
ii) Write a short note on 'Customer Retention'. (6)
(OR)
- b) Explain about Fourteen Points of Deming's Philosophy. (13)
12. a) i) Classify Motivation and List its characteristics and benefits. (6)
ii) Explain about 'Kaizen method' in continuous process improvement. (7)
(OR)
- b) i) Explain the role of indicators of performance in evaluating the success of an organization. (6)
ii) What is meant by strategic planning ? Describe the seven steps procedure of strategic planning cycle. (7)
13. a) Explain about Total Quality Management (TQM) tool 'Six Sigma'. (13)
(OR)
- b) i) List the various Failure Mode and Effect Analysis (FMEA) Stages and it's Benefits. (7)
ii) Leakage at a seal in a system exhibits Weibull distribution with characteristic life of 1500 hours. The shape parameter is 0.75. What is its reliability at 500 hours ? What percent of seals should expect to leak by 1000 hours. (6)
14. a) i) Classify the control charts and briefly explain CUSUM chart. (5)
ii) Explain the eight pillars of Total Productive Management (TPM). (8)
(OR)
- b) i) Describe about 'Taguchi's Quality Loss Function'. (7)
ii) Write a short note on 'Process Capability'. (6)
15. a) i) What are the general requirements and elements of quality management system ? (7)
ii) Discuss the benefits of ISO 9000 certification. (6)
(OR)
- b) i) Describe briefly different tiers and benefits involved in Documentation of quality system. (7)
ii) List the various benefits of Environmental Management System (EMS). (6)



PART – C

(1×15=15 Marks)

16. a) The values for $\sum \bar{X}$, $\sum R$ for a process for 20 sub-groups of 5 samples are 356902 and 196 respectively. Specification limits for process are 171 ± 11 .
- i) Determine the control limits for \bar{X} , R charts.
 - ii) Sub-groups 1 and 3 have R value of 25 and 20. As these are very much out, may be discarded. Determine new control limits now.
 - iii) The scrap is very costly and as such it should be avoided. How the process should be changed for achieving this and what will be new control limits (Hint : Scrap is costly means, keep LSL = LCL).

(OR)

- b) Select a problem in your daily life processes and use the seven phases to solve it.
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